

# COMET TRC-SA



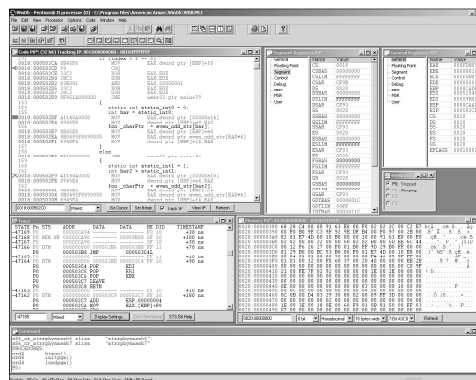
## In-circuit Emulator for Intel® Pentium® II/III and Celeron™ Processors

Welcome to American Arium's state-of-the-art family of COMET in-circuit emulators. COMET products offer exceptional visibility to your target operation. Our TRC-SA ICE provides real-time run control and superb event and trigger manipulation, including accurate breakpoint capabilities on both the processor *and* the frontside bus, giving you a robust tool for pinpointing and eliminating low-level software hangs. In addition to including all the features you would expect to find in any professional debugging tool, American Arium's COMET TRC-SA incorporates additional proprietary technology to further improve debug time, helping you complete your project on schedule and within budget.

The TRC-SA is a full-featured in-circuit emulator designed to debug BIOS, device drivers, OS kernels, and embedded applications with a frontside bus cycle of up to 100 MHz.

Primary among the TRC-SA's features is trace capability, giving you the ability to review execution history in order to analyze past events. It employs American Arium's state-per-transfer data capture technology that aligns processor cycles for reliable bus cycle type, address, *and* data breakpoint functionality. You can even break on deferred cycles. In addition, the emulator offers all the features of our in-target probes (ITPs), eliminating the need for multiple solutions to different software problems.

The WinDbg debugger interface is an American Arium core technology specifically designed for high-end Intel Architecture (IA) design and debug. The 32-bit application runs on Microsoft® Windows® 95/98/NT/2000.



WinDbg Interface

WinDb is used with all American Arium probes and emulators. Because the company has designed and developed the software specifically for the equipment, the tight integration of the hardware and software gives you the most reliable product on the market today. Easy to install and use, the software has IA-32- and IA-64-specific features that cannot be found in any other debugger. You can step through mode changes, set breakpoints in out-of-context address space, and view fly-over addresses as never before.

American Arium has forged a synergistic relationship with Intel Corporation, creating strong working ties with the chip maker. With privileged access to early silicon, our debugging tools support most Intel processors, including the Intel Pentium II/III and Celeron processors. And Intel is not only a supplier but a customer, using our emulators to debug their systems. Such a relationship helps ensure the reliability and compatibility of all of our products.

### TRC-SA Features

- ✱ Works in real time
  - All processor frequencies
- ✱ Breakpoints
  - 4 debug register
  - 64 software
  - 6 hardware events
  - 4 sequence levels
  - 1 counter
  - SMM entry/exit
  - Reset
  - BNC external trigger in/out
  - Bus de-pipeline in hardware
  - Deferred cycles supported
  - 16 external probes (optional)
- ✱ Source code/symbolic debug
  - Boot-loadable OMF-386,
  - ELF/DWARF2, Intel Textsym
- ✱ Multi-processing (SMP) support
- ✱ Real-time trace
  - 100 MHz bus acquisition
  - 128K x 207 bits
  - 31-bit, 10 ns timestamp
  - 16 external probes (optional)
  - Disassembly with cache enabled
  - SMP threads recorded (color coded)
  - Integrated symbols
  - Linked C source code
  - Bus event filtering
  - Save to disk
- ✱ Registers
  - 386
  - System
  - Control
  - Debug
  - MSRs
  - Floating point
  - MMX™ technology
  - XMM (SSE)
- ✱ Address translation
  - Real
  - Virtual-86
  - BigReal
  - Protected
  - System Management Mode
- ✱ Robust command language
- ✱ Download formats
  - BIN, OMF-386, ELF,
  - DOS EXE, Intel Hex
- ✱ Dynamic page translation
- ✱ Self-diagnostic test suite
- ✱ Remote control package (optional)
- ✱ 1 year free comprehensive warranty

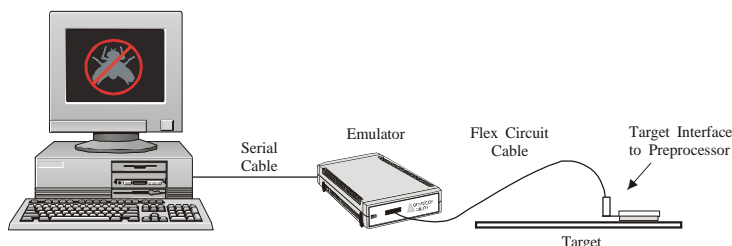
# COMET TRC-SA

Intel IA-32, 370-pin PPGA processors can be emulated via a JTAG ITP tool (ECM-S2) as well as a TRC-SA.

The primary differences between the ECM-S2 and the TRC-SA are:

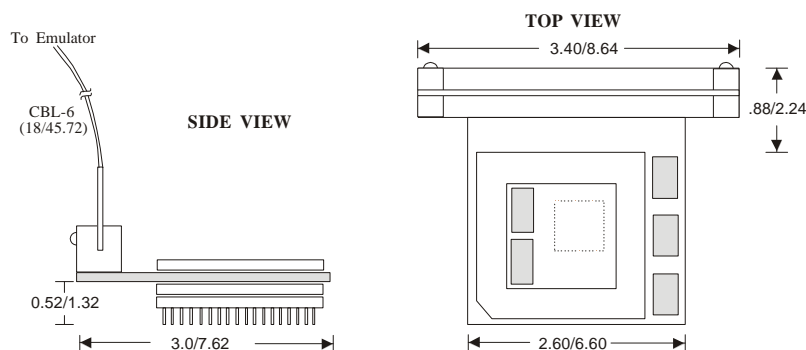
1. **Processor bus trace** - The ECM-S2 is a run control tool only. In the TRC-SA, the processor trace is used to view a history of executed code. Filters can be used to view specific events that are important while debugging.
2. **Bus breakpoints** - Since the TRC-SA monitors the frontside bus, you can set breakpoints on hardware bus events. Complex sequences can be used to stop the processor. I/O and memory read and write triggers can be specified with data values.
3. **Interconnect** - The ECM-S2 connects via a test access port (TAP). The TRC-SA plugs directly into the 370-pin PGA socket.

TRC-SA BLOCK DIAGRAM



PREPROCESSOR MECHANICAL SPECIFICATIONS

Scale: in/cm



## PC Host Requirements

- PC host (Pentium processor or higher)
- Windows 95/98/NT/2000
- SVGA monitor (800x600 or higher)
- 20 Mbytes hard disk space
- 16 Mbytes RAM

## Ordering Information

TRC-SA	Intel 370-pin PPGA processor full-featured in-circuit emulator. Includes COMET frontside bus trace emulator, interface hardware, power supply, cables, WinDb software, manual, and one year STAR-1 service agreement.
PRB-16	16-channel external probe
WDB-SRVR	WinDb remote software module
STAR-1	Annual five-point service agreement

## Specifications

<b>Environmental:</b>	32-90°F (0-31°C), max. 85% humidity
<b>Electrical:</b>	100-120 V or 220-260 V, 50-60 Hz
<b>Probe Loading:</b>	5 pf + 1.3 inches of trace ~60 Ohm impedance ~180 psec/inch
<b>Communications:</b>	115 KBAUD RS-232, LAN/WAN
<b>Dimensions (in/cm):</b>	(H) 2.25/5.7 (W) 11/27.9 (L) 9.6/24.4

## The Company

American Arium has been the primary market supplier of Pentium processor ITPs and ICEs since 1992. The company introduced Intel Pentium Pro and Pentium II processor development tools in 1995 and 1996, respectively. In 1998, American Arium introduced tool support for the Pentium II Xeon™ processor. The company currently supports Intel Celeron, Pentium, Pentium II/III, Pentium 4, Pentium II/III Xeon, Mobile Pentium, Mobile Pentium II/III, Pentium Pro, and Itanium™ processors. The company's mission is to provide timely, superior technical products with an unmatched commitment to service.

*Note: Equipment specifications and performance characteristics may change without notice.*

